

# **EXHIBIT 1**

**UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF MICHIGAN  
SOUTHERN DIVISION**

*In re Flint Water Cases 16-10444*

*The Hon. Judith E. Levy*

**DECLARATION OF COREY M. STERN, ESQ.**

Pursuant to 28 U.S.C. § 1746, I, Dr. Aaron Specht, hereby declare as follows:

1. I am an Assistant Professor at Purdue University and Visiting Scientist at Harvard University.

2. I attained a Ph.D. in medical physics and am the leading expert on the use of portable x-ray fluorescence technology (“pXRF”) to assess metal exposures.

3. I have published widely on the use of pXRF to measure bone-lead content in adults, children, and animals.

4. I was retained by Plaintiffs’ counsel in the above captioned matter and submit this Declaration as part and in support of PLAINTIFFS’ BRIEF REGARDING VEOLIA DEFENDANTS’ REQUEST FOR DR. AARON SPECHT’S PROPRIETARY MATLAB CODE.

5. MATLAB is a programming platform designed specifically for engineers and scientists to analyze and design systems. The MATLAB language is a high-performance language for technical computing. It is a matrix-based language allowing the most natural expression of computational mathematics.

<https://www.mathworks.com>.

6. The p code function produces MATLAB program files in a proprietary obfuscated code format. <https://www.mathworks.com/help/matlab/ref/pcode.html>.

The m file function provides a summary of the programs in a particular folder.

[https://www.mathworks.com/help/matlab/matlab\\_prog/create-a-help-summary-contents-m.html](https://www.mathworks.com/help/matlab/matlab_prog/create-a-help-summary-contents-m.html).

7. I used the p code and m file functions of the MATLAB program to develop code which could quickly read the data generated by the pXRF device and calculate a bone lead level. The resulting code is proprietary because it allows me to do the bone lead level measurements more efficiently than other experts who, although able to produce the same results, would need to achieve those results through their own means. Further, because I developed this MATLAB code, I hold copyright over the code as well.

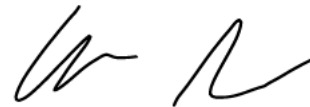
8. In addition, the code is superfluous to any discussion of what was produced from the measurements themselves. The process is described in sufficient detail to replicate any findings within the numerous publicly available research manuscripts. These include the following:

- Specht AJ, Dickerson AS, Weisskopf MG. Comparison of bone lead measured via portable x-ray fluorescence across and within bones. *Environmental Research*. 2019 (172:273-278);
- Zhang X, Specht AJ, Nie LH. Evaluation of a portable XRF device for in vivo quantification of lead in bone among a US population. *Science of the Total Environment*. 2021 (753:142351);

- Specht AJ, Kirchner KE, Weisskopf MG, Pokras MA. Lead exposure biomarkers in the Common Loon. Science of the Total Environment. 2019 (647:639-644);
- Specht AJ, Parish CN, Wallens EK, Watson RT, Nie LH, Weisskopf MG. Feasibility of a portable x-ray fluorescence device for bone lead measurements of condor bones. The Science of the Total Environment. 2018 (615:398-403);
- Specht AJ, Lin Y, Weisskopf M, Yan C, Hu H, Xu J, Nie LH. XRF-measured bone lead (Pb) as a biomarker for Pb exposure and toxicity among children diagnosed with Pb poisoning. Biomarkers: biochemical indicators of exposure, response, and susceptibility to chemicals. 2016 (21(4):347-52).

9. The code does not shed additional light on how the analysis is completed but simply follows the recipe outlined in the aforementioned published research.

Respectfully submitted, this the 17<sup>th</sup>  
day of February, 2023.

A handwritten signature in black ink, appearing to read 'A. Specht', written over a horizontal line.

Aaron Specht, PhD